

# Merrill Hall

This lab/class/library/event space achieves marked energy and materials performance, thanks to attentive design and effective diplomacy among a complex group of stakeholders.

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## Green Commercial Case Study

Accommodating multiple users in a constrained situation



### About Merrill Hall

Type	Classrooms and offices
Square Feet	19,670 (gross)
Location	University of Washington, Seattle Campus
Completed	January 2004

Merrill Hall, home of the Center for Urban Horticulture (CUH) and the first LEED-rated building on the University of Washington campus in Seattle, is proof that green design can deal with severe constraints. A very tight budget, site issues, diverse program demands, a complex set of constituencies—all ultimately yielded to energetic users, wide public engagement, and sound engineering and design. The project's LEED Silver rating is based on energy performance, close attention to minimizing finishes, sourcing materials locally or regionally, strategic use of natural ventilation and daylighting, and effective educational use of building functions.

**The present Merrill Hall replaces a 1984 building ruined by arson in May 2001.** Galvanized by the tragedy, CUH students and faculty saw rebuilding as a golden chance for campus sustainability, while the university administration moved quickly to secure replacement funding. There followed an intense period of negotia-

tion and maneuvering over costs and methods. The university had asked for too little money to replace all functions, and green approaches were unfamiliar to campus decision-makers. Faculty and student advocates worked effectively to select an architect with sustainable design expertise, and to generate significant outside funding. CUH connections with the wider public, built up through years of garden tours and advice, proved important in mobilizing wide public interest in the issue. The university eventually agreed to fund all functions (helped by private donations totaling over 10% of the project's \$8.2 million design and construction cost) and to pursue LEED certification.

From this point, strong continued engagement by users and rapidly increasing buy-in by the university's Capital Projects Office supported design development that took the project to just three points short of a Gold rating.

**An early, heavily attended design charrette** placed first priority on reducing energy and water use. Captured rainwater and efficiently controlled subsurface drip irrigation decrease outdoor water use by 63% compared to a baseline design. Indoors, waterless urinals and ultra low flow toilets yield a 38% reduction.

### Ratings & Awards

**LEED 2.0 Silver Rating**  
US Green Building Council, 2005

**Civic Design Citation Award**  
AIA Washington, 2006

**Regional Technology Award, Institutional Buildings**  
ASHRAE Region XI, 2005-06



## The Team

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### Structural Engineer

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### Landscape Architect

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### Sustainability Consultant

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### Owner & Developer

University of Washington,  
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## For More Info

### Seattle City Green Building

provides guidelines, incentives, and assistance to increase the environmental performance of buildings in Seattle.  
www.seattle.gov/dpd/greenbuilding

### Seattle City Light

provides stable, competitively priced and environmentally sound electricity to customers.  
www.seattle.gov/light

### Seattle Public Utilities

provides customers with reliable and cost-effective water, sewer, drainage and solid waste services, while protecting public health and balancing social and environmental responsibilities to the community.  
www.seattle.gov/util/services

### Renewable Choice Energy

provides green power.  
(877) 810-8670  
www.renewablechoice.com

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### Energy design makes important use of natural ventilation.

Perimeter spaces use a combination of operable windows and trickle vents to get adequate cooling in warm weather and fresh air in cold weather. South-facing glazing on the central stairwell enhances air movement with a thermal chimney effect. There is less artificial light, due to extensive daylighting tempered by judiciously placed overhangs. The mechanical system, vital in this building for labs and library archives, uses variable volume air handlers wherever possible, as well as high efficiency condensing boilers.

LEED energy performance protocols do not recognize savings from natural ventilation. The project achieved credit for reduced energy use when the mechanical system consultants worked up a simulated conventional system, which LEED agreed to recognize as a comparison.

**Seattle City Light's Green Power program** funded a 9.6 kW solar electric array for the roof, which provides about nine percent of the building's energy and displays its performance in real time on a meter in the library and on the City Light web site. Users and friends donated the cost of "green tags" to ensure that the remainder of building electric power comes from renewable sources during its initial years.

The concept of "structure as finish" guided the design toward polished concrete slab flooring on the first floor, uncovered mechanical and electrical systems, and exposed structural wood throughout. Since CUH is part of the university's College of Forest Resources, making the variety of wood uses visible in the building serves an educational function.

**Appropriate selection and sourcing of materials** was a major consideration for Merrill Hall. For example, the building uses strawboard cabinets and water-based adhesives and caulks, and reuses concrete from demolition of the old building. Indoor air quality benefits from systematic choice of low volatile organic compound (low VOC) paints, carpets, glues and sealants. Finally, close to 50% of the new materials in the building were harvested and/or manufactured within 500 miles, with consequent reduction in the energy and environmental costs of transportation.

The Merrill Hall site originates from the 1960's capping of a former landfill, which also created adjoining marshlands protected as the Union Bay Natural Area. This ensures attractive views and access to pleasant walks, but challenged designers with a high water table, low capacity soils, and a certain level of methane emission from the landfill materials. Conventional foundation practices and a passive venting system proved well able to handle these matters.

**The Center for Urban Horticulture combines an unusual range of activities**—laboratory research, classes for degree-seeking and extension students, demonstration gardens, and frequent workshops for the general public. The focus is on using plants to restore strongly impacted environments. Each year, the Center and its grounds welcome approximately 100,000 visitors. Support from this broad constituency was critical. Initial grassroots commitment widened design possibilities for the Merrill Hall project. A core group of green design champions found themselves in tune with a public ready to support sound design and high visibility. The result is a handsome, sustainable addition to the University of Washington and the Seattle area.



www.seattle.gov/dpd/greenbuilding

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